



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department
of Community Health



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New updates in this issue:

- **Michigan Surveillance:** Influenza activity, including hospitalizations, congregate facility outbreaks and positive lab tests, continues increasing.
 - **National Surveillance:** Activity continues to increase; 99% of influenza viruses are 2009 novel H1N1.
 - **International Surveillance:** Northern Hemisphere activity continues to increase earlier than normal.
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******2009 Influenza A (H1N1) virus Updates******

On August 17 and September 18, MDCH released guidance for healthcare providers, laboratorians and public health personnel regarding appropriate patients for influenza testing at the MDCH lab and reporting of influenza hospitalizations and deaths. The guidance is available at www.michigan.gov/h1n1flu.

Please continue to reference the State of Michigan's novel 2009 influenza A (H1N1) website at www.michigan.gov/h1n1flu and the MDCH influenza website at www.michigan.gov/flu for additional information. Local health departments can find guidance documents in the MI-HAN document library. In addition to the previous websites, additional laboratory-specific information is located at the Bureau of Laboratories H1N1 page at http://www.michigan.gov/mdch/0,1607,7-132-2945_5103-213906--,00.html.

International (WHO Pandemic H1N1 Update 69 [edited], October 9): As of 4 October 2009, worldwide there have been more than 375,000 laboratory confirmed cases of pandemic influenza H1N1 2009 and over 4500 deaths reported to WHO. As many countries have stopped counting individual cases, particularly of milder illness, the case count is significantly lower than the actual number of cases that have occurred. WHO is actively monitoring the progress of the pandemic through frequent consultations with the WHO Regional Offices and member states and through monitoring of multiple sources of data.

In the temperate regions of the Northern Hemisphere, transmission of influenza virus and rates of influenza-like-illness (ILI) continue to increase marking an unusually early start to fall and winter influenza season in many countries. Geographically widespread influenza is being reported throughout North America, with the United States reporting ILI levels elevated above the seasonal baseline for the past month and Mexico reporting a high intensity of respiratory diseases for the past three weeks. In Canada, although overall ILI activity remains low, focal increases have been reported in the western part of Canada. In Europe and Central and Western Asia, early transmission of influenza virus continues to increase in many countries, with more intense focal activity being reported in a few. National or regional ILI levels remained elevated above the baseline in parts of the United Kingdom (Northern Ireland and Scotland), Ireland, and Israel. In Ireland, a high intensity of respiratory diseases has been reported for the past two weeks, with the highest rates of ILI reported among children aged 5-14 years old. In addition to Ireland and Israel, widespread geographic spread of influenza virus is also now being reported in Belgium, the Netherlands, and Cyprus. At least 10 countries in the region are also reporting an increasing trend in respiratory diseases activity. In Japan, influenza activity continues to be elevated above the seasonal epidemic threshold since week 33, most recently in the large population centers.

In the tropical regions of the Americas and Asia, influenza virus transmission persists, however influenza activity remained variable. Geographically widespread to regional influenza activity continues to be reported throughout the tropical region of the Americas without a consistent overall trend (and increasing trend in parts of the Caribbean, and decreasing in much of tropical Central and South America). High intensity respiratory diseases activity was reported in Columbia, Cuba, and El Salvador, and moderate healthcare impact was experienced in many countries; two countries, Barbados and St. Lucia, reported severe healthcare impact. As influenza transmission slowly declines in many parts of South and

Southeast Asia, several countries are reporting geographically regional spread (India, Bangladesh, and Thailand) or localized spread (Sri Lanka and Myanmar) of influenza activity; and most countries in the region have reported experiencing a low health care impact since late September.

In the temperate regions of the southern hemisphere, influenza transmission has largely subsided (Chile, Argentina, and New Zealand) or continues to decline substantially (South Africa and Australia).

All pandemic H1N1 2009 influenza viruses analyzed to date have been antigenically and genetically similar to A/California/7/2009-like pandemic H1N1 2009 virus.

Systematic surveillance conducted by the Global Influenza Surveillance Network (GISN), supported by WHO Collaborating Centres and other laboratories, continues to detect sporadic incidents of H1N1 pandemic viruses that show resistance to the antiviral oseltamivir. To date, 31 resistant pandemic H1N1 influenza viruses have been detected and characterized worldwide. All of these viruses show the same H275Y mutation that confers resistance to the antiviral oseltamivir, but not to the antiviral zanamivir. Worldwide, more than 10,000 clinical specimens (samples and isolates) of the pandemic H1N1 virus have been tested and found to be sensitive to oseltamivir.

The countries and overseas territories/communities that have newly reported their first pandemic (H1N1) 2009 confirmed case(s) since the last web update (No. 68) as of 4 October 2009 are: Tajikistan.

Region	Cumulative total	
	as of 4 October 2009	
	Cases*	Deaths
WHO Regional Office for Africa (AFRO)	12382	70
WHO Regional Office for the Americas (AMRO)	146016	3292
WHO Regional Office for the Eastern Mediterranean (EMRO)	12861	80
WHO Regional Office for Europe (EURO)	Over 59000	At least 193
WHO Regional Office for South-East Asia (SEARO)	38038	480
WHO Regional Office for the Western Pacific (WPRO)	109926	410
Total	Over 378223	At least 4525

*Given that countries are no longer required to test and report individual cases, the number of cases reported actually understates the real number of cases.

Influenza Surveillance Reports

Ed. Note: The 2009-10 influenza season began on Oct. 4, 2009. Data was reset at that time, except for influenza hospitalizations and deaths, which is reported from Sept. 1, 2009 per CDC guidance.

Michigan Disease Surveillance System: The week ending October 10 saw aggregate flu-like numbers remain steady, while individual influenza reports slightly increased. Novel influenza reports increased over the previous week's numbers. Aggregate numbers are slightly higher than numbers seen at this time last year, while individual reports are noticeably higher than the same reporting week last year. Novel influenza reports are increasing and currently at levels seen when reporting began at the end of April 2009.

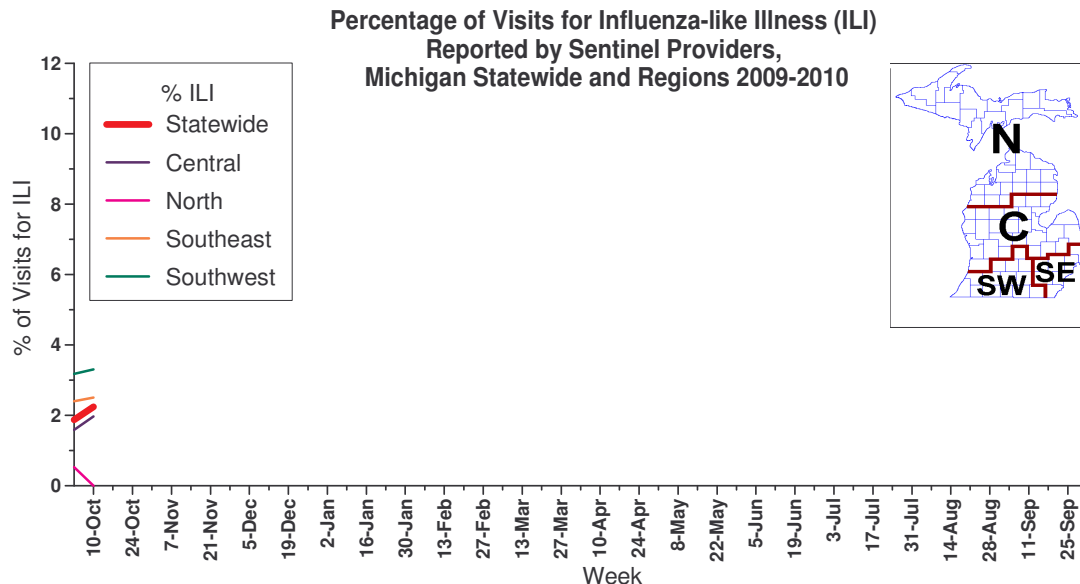
During the week of October 4-10, 2009, 8226 cases of flu-like illness and confirmed and probable cases of seasonal and novel influenza were reported in Michigan. 27 hospitalizations and no deaths associated with influenza were also reported. This report is updated every Tuesday by 5:00 pm and can be accessed at a link on this website: <http://www.michigan.gov/h1n1flu>.

Emergency Department Surveillance: Emergency department visits from constitutional complaints continues to increase, while respiratory complaints were near last week's levels. Compared to the same time period last year, constitutional reports are considerably higher, and respiratory numbers are slightly higher. Nine constitutional alerts were generated in the C(1), SE(1), N(2), SW(4) Influenza Surveillance Regions and 1 statewide alert. Further, six respiratory alerts were generated in the SE(1) and SW(5) Influenza Surveillance Regions last week.

Over-the-Counter Product Surveillance: This week, OTC product sales were consistent with the previous week's sales, with one exception. Thermometer sales began to see a slight increase over the previous week's levels near the end of the week. All other sales indicators remain near their previous

week's levels. All sales indicators, with the exception of thermometer sales, which are slightly higher, are comparable to levels seen at this time last year.

Sentinel Provider Surveillance (as of October 15): During the week ending October 10, 2009, the first official week of the 2009-2010 flu season, the proportion of visits due to influenza-like illness (ILI) increased compared to the previous week at 2.2% overall; 159 patient visits due to ILI were reported out of 7,094 office visits. Twenty-three sentinel sites provided data for this report. Activity increased in three surveillance regions: Central (2.0%); Southeast (2.5%); Southwest (3.3%); and decreased in the North (0.0%) region. Please note that these rates may change as additional reports are received.



As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Laboratory Surveillance (as of October 15): For the 2009-2010 season, MDCH Bureau of Laboratories has identified 55 influenza isolates:

- Novel Influenza A (H1N): 53
- Influenza A unsubtypeable: 1
- Influenza B: 1

14 sentinel labs reported for the week ending October 10, 2009. 7 labs reported increasing influenza A positives (SE, SW, C, N), 2 labs had steady A positives (SE, SW), and 5 labs saw zero A positives (SE, C, N). 1 lab reported sporadic influenza B positives (SE); 12 labs had zero B positives (SE, SW, C, N).

Michigan Influenza Antigenic Characterization (as of October 10): Recent updates were received regarding antigenic characterization data for Michigan for the 2008-09 influenza season. 3 influenza A/H3N2 isolates, one of which was collected in early August, have been antigenically characterized at the CDC as A/Brisbane/10/2007-like, which matches the A/H3N2 component of this season's vaccine. One A/H3N2 isolate, collected in late July, has been characterized as a A/Perth/16/2009-like virus. The A/Perth/16/2009-like strain has recently evolved from A/Brisbane/10/2007 and was recommended by WHO as the influenza A(H3N2) vaccine strain for the 2010 Southern Hemisphere influenza vaccine.

2 additional Michigan pandemic influenza A (H1N1) specimens from the 2008-09 season have been antigenically characterized by the CDC as A/California/07/2009-like (H1N1)v. This strain is the variant reference virus selected by WHO for the pandemic influenza A(H1N1) vaccine.

CDC antigenic characterization results are currently not available for any 2009-10 season specimens.

Michigan Influenza Antiviral Resistance Data (as of October 10): Results are currently not available for antiviral resistance at CDC for the 2009-2010 season.

Antiviral resistance testing takes months to complete and cannot be used to guide individual patient treatment. However, CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza. The guidance is available at <http://www.cdc.gov/H1N1flu/recommendations.htm>.

Seasonal Influenza-Associated Pediatric Mortality (as of October 10): No influenza-associated pediatric mortalities have been reported to MDCH for the 2009-2010 influenza season.

***CDC has asked states for information on any pediatric death associated with influenza. This includes not only any pediatric death (<18 years) resulting from a compatible illness with laboratory confirmation of influenza, but also any unexplained pediatric death with evidence of an infectious process. Please immediately call MDCH to ensure proper specimens are obtained. View the complete MDCH protocol online at http://www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of October 15): One congregate setting outbreak due to novel influenza A (H1N1) (SW), and two outbreaks due to influenza A (1C, 1N) have been reported to MDCH for the 2009-2010 influenza season. In addition, 3 other congregate setting outbreaks due to influenza-like illness but without laboratory testing (1SW, 1C, 1N) have been reported.

4 novel influenza A (H1N1) related school and/or district closures in Michigan (2 SW, 2 N) have been reported to CDC through their online school dismissal reporting system for the 2009-2010 season.

National (CDC [edited], October 9): During week 39 (September 27-October 3, 2009), influenza activity increased in the U.S. 2,968 (27.4%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. 99% of all subtyped influenza A viruses being reported to CDC were 2009 influenza A (H1N1) viruses. The proportion of deaths attributed to pneumonia and influenza (P&I) was at the epidemic threshold. Nineteen influenza-associated pediatric deaths were reported. Sixteen of these deaths were associated with 2009 influenza A (H1N1) virus infection and three were associated with influenza A virus, for which subtype is undetermined. The proportion of outpatient visits for influenza-like illness (ILI) was above the national baseline. Regions 3 through 10 reported ILI above region-specific baseline levels; Regions 1 and 2 were below region-specific baselines. Thirty-seven states reported geographically widespread influenza activity, Guam and 11 states reported regional influenza activity, two states, the District of Columbia, and Puerto Rico reported local influenza activity, and the U.S. Virgin Islands did not report.

Antiviral Testing Results:

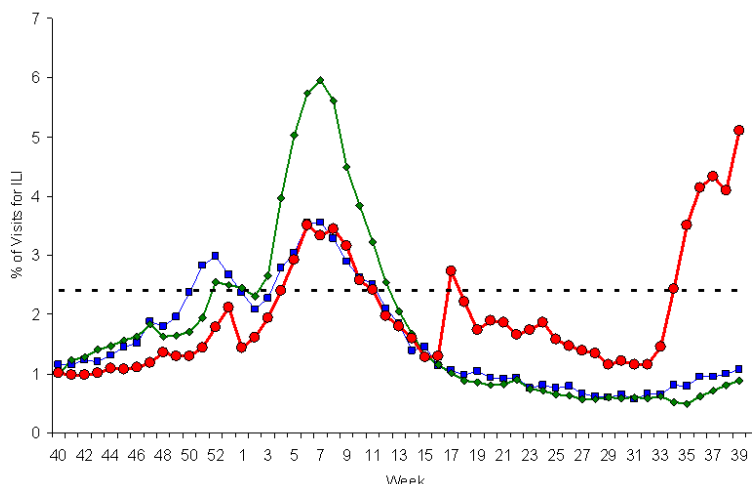
	Samples tested (n)	Resistant Viruses, Number (%)	Samples tested (n)	Resistant Viruses, Number (%)	Samples tested (n)	Resistant Viruses, Number (%)
		Oseltamivir		Zanamivir		Adamantanes
Seasonal Influenza A (H1N1)	1,151	1,146 (99.6%)	1,151	0 (0)	1,157	7 (0.6%)
Influenza A (H3N2)	264	0 (0)	264	0 (0)	271	271 (100%)
Influenza B	654	0 (0)	654	0 (0)	N/A*	N/A*
2009 Influenza A (H1N1)	2,040	10†‡ (0.5)	989	0 (0)	526	526 (100%)

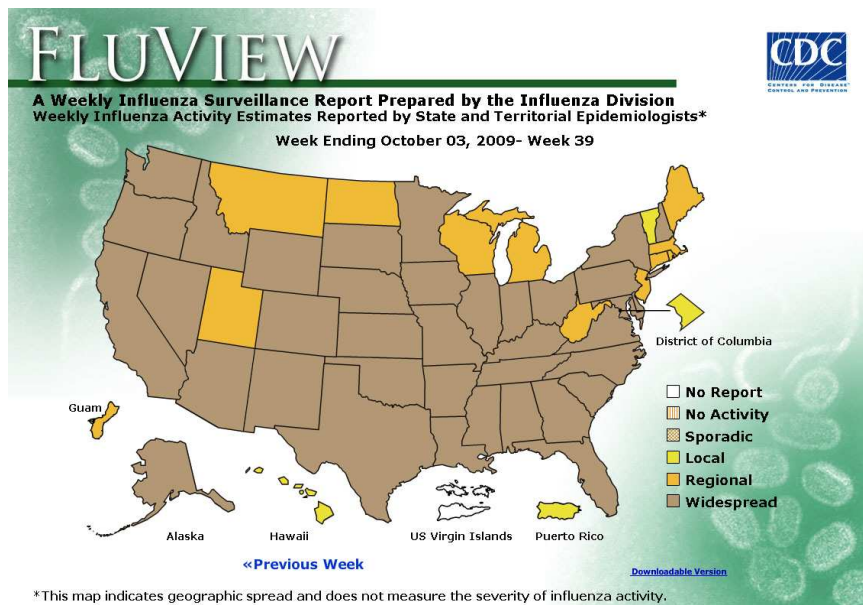
*The adamantanes (amantadine and rimantadine) are not effective against influenza B viruses.

†Two screening tools were used to determine oseltamivir resistance: sequence analysis of viral genes or a neuraminidase inhibition assay.

‡Additional laboratories perform antiviral resistance testing and report their results to CDC. Two additional oseltamivir resistant 2009 influenza A (H1N1) viruses have been identified by these laboratories, bringing the total number to 12.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-09 and Previous Two Seasons





To access the entire CDC weekly surveillance report, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>

From <http://www.cdc.gov/h1n1flu/updates/us/#totalcases>:

U.S. Influenza and Pneumonia-Associated Hospitalizations and Deaths from Aug 30 – October 3, 2009

Cases Defined by	Hospitalizations	Deaths
Influenza and Pneumonia Syndrome*	12,384	1,544
Influenza Laboratory-Tests**	3,874	240

*Reports can be based on syndromic, admission or discharge data, or a combination of data elements that could include laboratory-confirmed and influenza-like illness hospitalizations.
 **Laboratory confirmation includes any positive influenza test (rapid influenza tests, RT-PCR, DFA, IFA, or culture), whether or not typing was done.

International (WHO, October 2): During the weeks 36-37, the pandemic influenza A (H1N1) 2009 virus continued to be the predominant circulating strain of influenza in many countries both in the northern and southern hemisphere. In the northern hemisphere, influenza activity continued to increase in some areas. In North America, the United States of America has reported widespread outbreaks of pandemic influenza A (H1N1) 2009. Localized outbreaks of pandemic influenza A (H1N1) 2009 were reported in some parts of Canada. In Europe, most countries reported low or moderate influenza activity. Local outbreaks were reported by the United Kingdom of Great Britain and Northern Ireland, and the Netherlands while Israel reported widespread activity.

In the tropical regions of the Americas and Asia, pandemic influenza A (H1N1) 2009 influenza activity remained variable. In parts of India, Bangladesh and Cambodia, influenza transmission continued to be active, while countries in South-east Asia such as Indonesia, Singapore and Thailand reported declining transmission. Peru and Mexico have reported an increase in influenza activity. Influenza transmission in the southern hemisphere has largely returned to baseline (Chile, Argentina, and New Zealand) or is continuing to decline (Australia and South Africa).

The level of seasonal influenza activity in most countries was low with only sporadic detections. China continued to report regional outbreaks of H3 with sporadic H1 and B activity.

The entire report can be viewed online at <http://www.who.int/csr/disease/influenza/update/en/>.

MDCH reported **REGIONAL INFLUENZA ACTIVITY** to the CDC for the week ending October 10, 2009.

For those interested in additional influenza vaccination and education information, the MDCH *FluBytes* is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Avian and Novel Influenza Activity

WHO Pandemic Phase: Phase 6 – characterized by increased and sustained transmission in the general population. Human to human transmission of an animal or human-animal influenza reassortant virus has caused sustained community level outbreaks in at least two WHO regions.

International, Vaccine Recommendations (WHO Weekly Epidemiological Record [edited], October 9): It is recommended that vaccines for use in the 2010 influenza season (southern hemisphere winter) contain the following: an A/California/7/2009 (H1N1)-like virus; an A/Perth/16/2009 (H3N2)-like virus; a B/Brisbane/60/2008-like virus.

International, Swine (OIE [edited], October 12): Pandemic A/H1N1 2009 virus
Date of first confirmation of the event 10/10/2009; Date of Start of Event 09/10/2009
Date of report 12/10/2009; Date Submitted To OIE 12/10/2009
Sender of the report: Dr Keren Bar-Yaacov, Assistant Director General, Chief Veterinary Officer, Norway
Location: NORD-TRONDELAG Regional office of Trøndelag District office of Sør-Innherred

Species: Swine; Susceptible: 850; Cases: 1; Deaths: 0; Destroyed: 0; Slaughtered: 0
Affected Population: Farrow to finishing swine herd with approximately 85 sows and a total of 850 pigs.
Total outbreaks = 1

Epidemiological comments: The farmer of the herd had been sick with flu-like symptoms for some time and on Thursday 7 October the diagnosis of pandemic flu (influenza A/H1N1/2009) was verified. The infection seems to have been introduced in the herd from humans to the pigs in the farrowing unit.
Source of the outbreak(s) or origin of infection: Contact with infected person
Control Measures Applied: Quarantine, Screening
Animals treated: No; Vaccination Prohibited: Yes

Name of Laboratory: National laboratory National Veterinary Institute of Norway
Test Type: real-time reverse transcriptase/polymerase chain reaction (RRT-PCR)
Date: 10/10/2009
Results: Positive

There are 1 outbreaks that are still recorded as unresolved. It is not possible to declare this event resolved until these individual outbreaks are resolved. The event is continuing. Weekly follow-up reports will be submitted.

International, Avian (OIE [edited], October 13): Information received on 13 Oct 2009 from Dr Lucio Ignacio Carbajo Goni, subdirector General de Sanidad de la Producción Primaria, Direccion General de Recursos Agrícolas y Ganaderos, Ministerio de Medio Ambiente y Medio Rural y Marino, Madrid, Spain

Report type: immediate notification
Start date: 9 Oct 2009
Date of 1st confirmation of the event: 11 Oct 2009
Date submitted to OIE: 13 Oct 2009
Manifestation of disease: clinical disease
Causal agent: highly pathogenic avian influenza virus Serotype H7

Total outbreaks: 1
Outbreak 1: Guadalajara, [Castile-La Mancha]
Date of start of the outbreak: 9 Oct 2009
Outbreak status: continuing (or date resolved not provided)
Species: birds
Susceptible: 308640; Cases: 30 000; Deaths: 30 000; Destroyed: 278 640; Slaughtered: 0
Affected population: a layer hen farm including 4 production houses (2 clinically affected) and a breeding house.

Apparent morbidity rate: 9.72 per cent; Apparent mortality rate: 9.72 per cent; Apparent case fatality rate: 100 per cent
Proportion susceptible animals lost*: 100 per cent *Removed from the susceptible population through death, destruction, and/or slaughter

Source of the outbreak(s) or origin of infection: unknown or inconclusive.

Epidemiological comments: the measures established by the directive 2005/94/EC in case of suspicion and confirmation of an outbreak of highly pathogenic avian influenza have been implemented: farm standstill, a 3 km [2 mi] protection zone and a 10 km [6 mi] surveillance zone, clinical inspections on farms in the area, etc. Also, all birds in the affected farm have been culled on site and carcasses and other farm equipment that could transmit the virus have been destroyed.

Laboratory name and type: Central Veterinary Laboratory, Algete (national laboratory)

Test: nucleotide sequencing; Test date: 11 Oct 2009; Result: positive

Test: real-time reverse transcriptase/polymerase chain reaction (RRT-PCR); Test date: 11 Oct 2009; Result: positive

The event is continuing. Weekly follow-up reports will be submitted.

Michigan Wild Bird Surveillance (USDA, as of October 15): For the 2009 testing season (April 1, 2009-March 31, 2010), HPAI subtype H5N1 has not been recovered from any of the 43 Michigan samples tested to date, including 34 live wild bird and 9 morbidity/mortality specimens. H5N1 HPAI has not been recovered from 11,404 bird or environmental samples tested nationwide for the 2009 season. For more information, visit the National HPAI Early Detection Data System at <http://wildlifedisease.nbii.gov/ai/>.

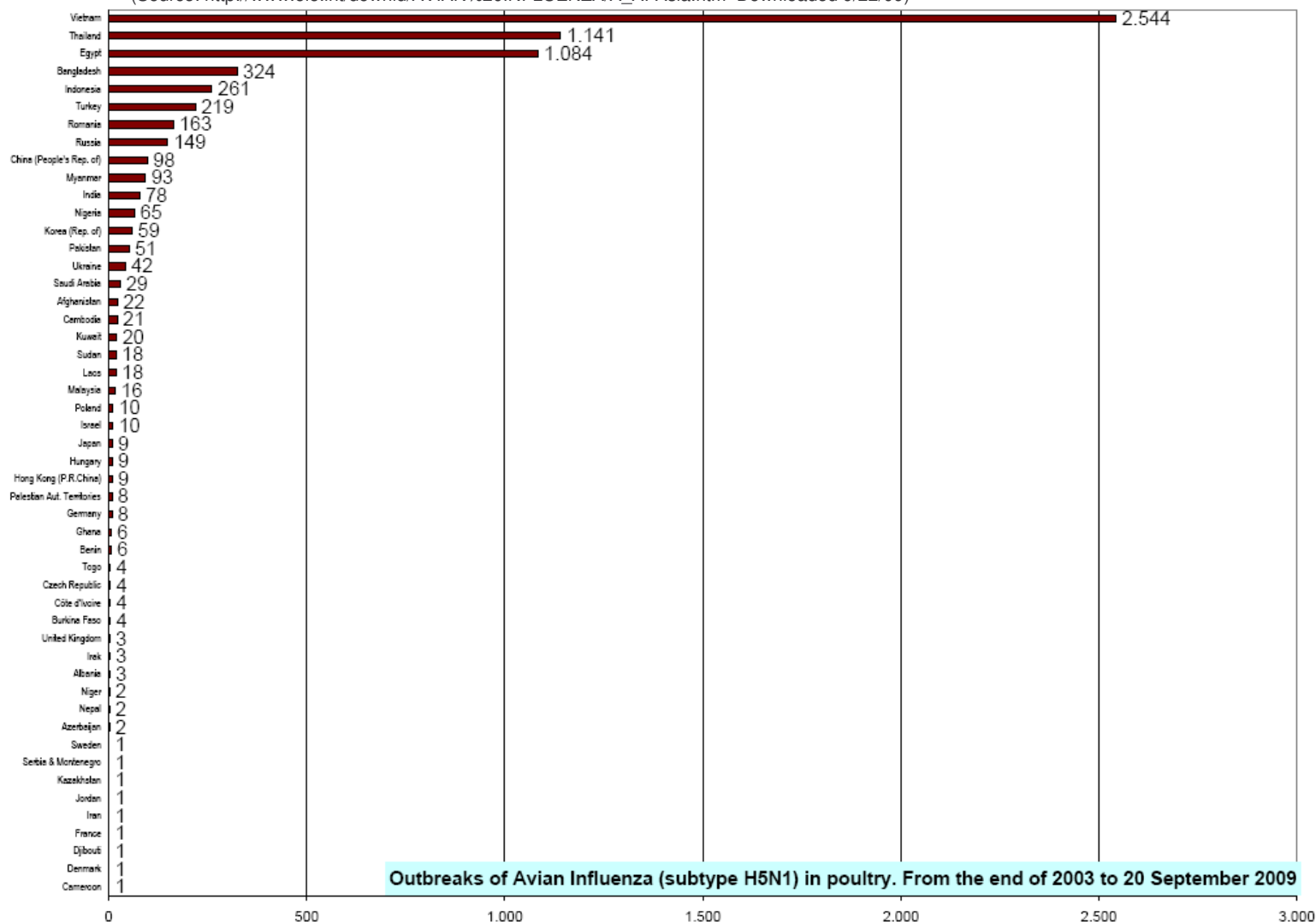
To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

Please contact Susan Peters at PetersS1@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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MDCH Bureau of Laboratories – Anthony Muyombwe; Victoria Vavricka

Table 1. H5N1 Influenza in Poultry (Outbreaks up to September 20, 2009)(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 9/22/09)**Table 2. H5N1 Influenza in Humans (Cases up to September 24, 2009)**

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2009_09_24/en/index.html Downloaded 9/24/2009)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		2009		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	1	0	0	0	8	7
China	1	1	0	0	8	5	13	8	5	3	4	4	7	4	38	25
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	8	4	36	4	87	27
Indonesia	0	0	0	0	20	13	55	45	42	37	24	20	0	0	141	115
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	6	5	4	4	111	56
Total	4	4	46	32	98	43	115	79	88	59	44	33	47	12	442	262